



NTSB National Transportation Safety Board

Two Emerging Transportation Safety Issues

Presentation to:

Association of Transportation Law
Professionals

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Outline

- NTSB Basics**
- Fatigue**
- Personal Electronic Devices**

NTSB 101

- Independent agency, investigate transportation accidents, all modes
- Determine probable cause(s) – but not blame or liability – and make recommendations to prevent recurrences
- ***SINGLE FOCUS IS SAFETY***
- Primary product: Safety recommendations
- Not a regulator, cannot require anything, but recommendation acceptance rate > 80%

Challenges of Fatigue

- **Underlying science not well developed**
- **Difficult to measure**
 - **Initially**
 - **Degradation while underway**
 - **Post-accident**
- **One size may not fit all**
 - **At work: Depends upon shift, duties, environment, many other factors**
 - **Not at work: Can't regulate activities, lifestyle**
- **How to assure coming to work well rested?**

Fatigue Factors

- Sleep**
- Diet**
- Exercise**
- Alcohol/Tobacco**
- Age**
- Other?**

Transportation Risk: OSA

- Lack of awareness**
- Falling asleep or fatigue-related decrements in performance**
- Up to 7-fold increase in risk of motor vehicle accident**
- Risk reduced with treatment**

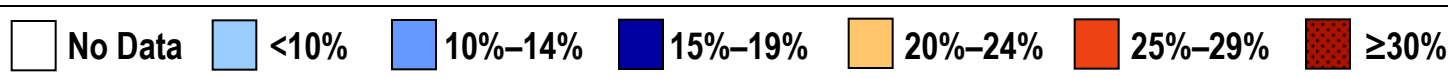
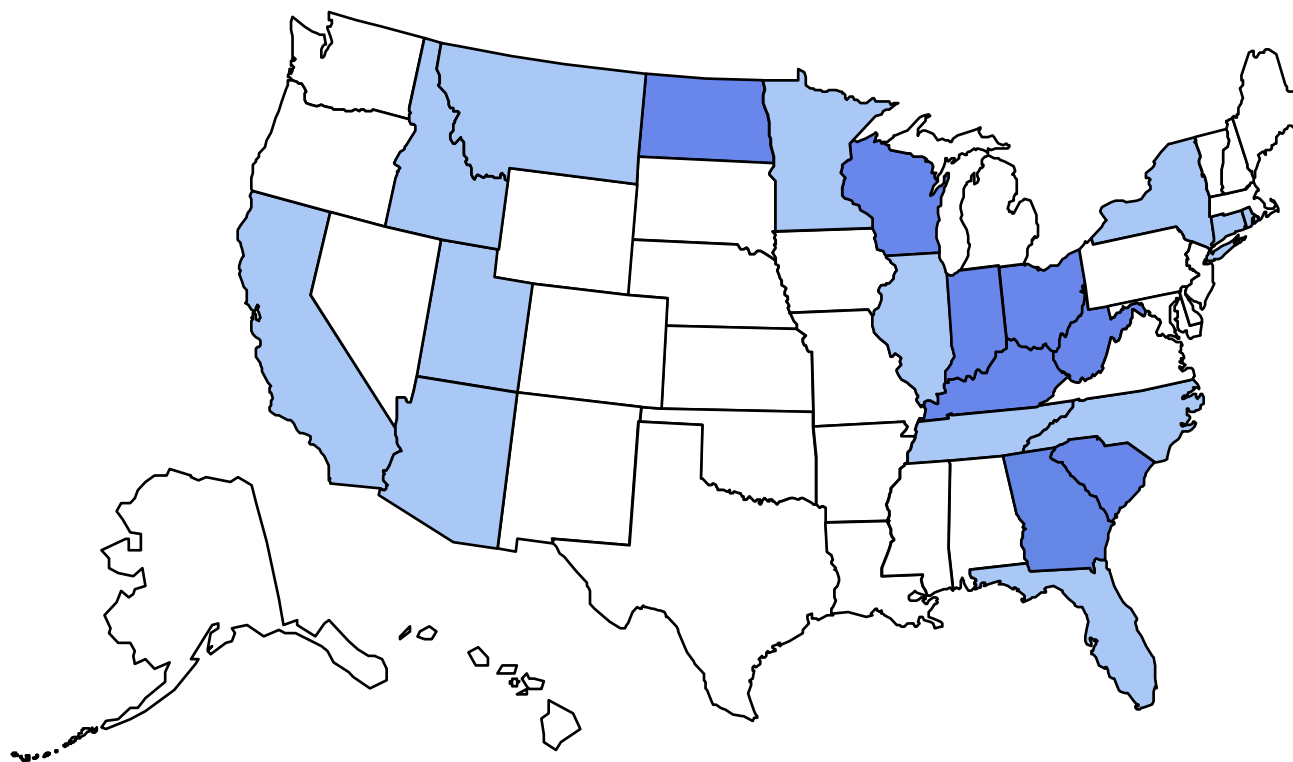
Associations with OSA

- SNORING**
- Body mass index (obesity)**
- Neck circumference**
- High blood pressure**
- Pulmonary hypertension, coronary artery disease, congestive heart failure, etc.**

Obesity* Among U.S. Adults

Behavioral Risk Factor Surveillance System, 1985

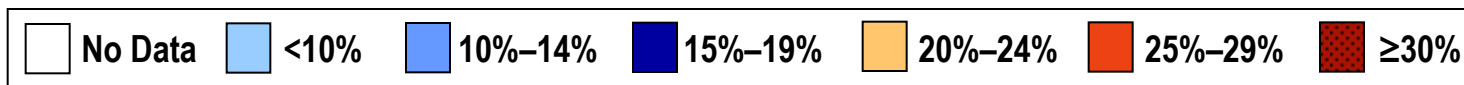
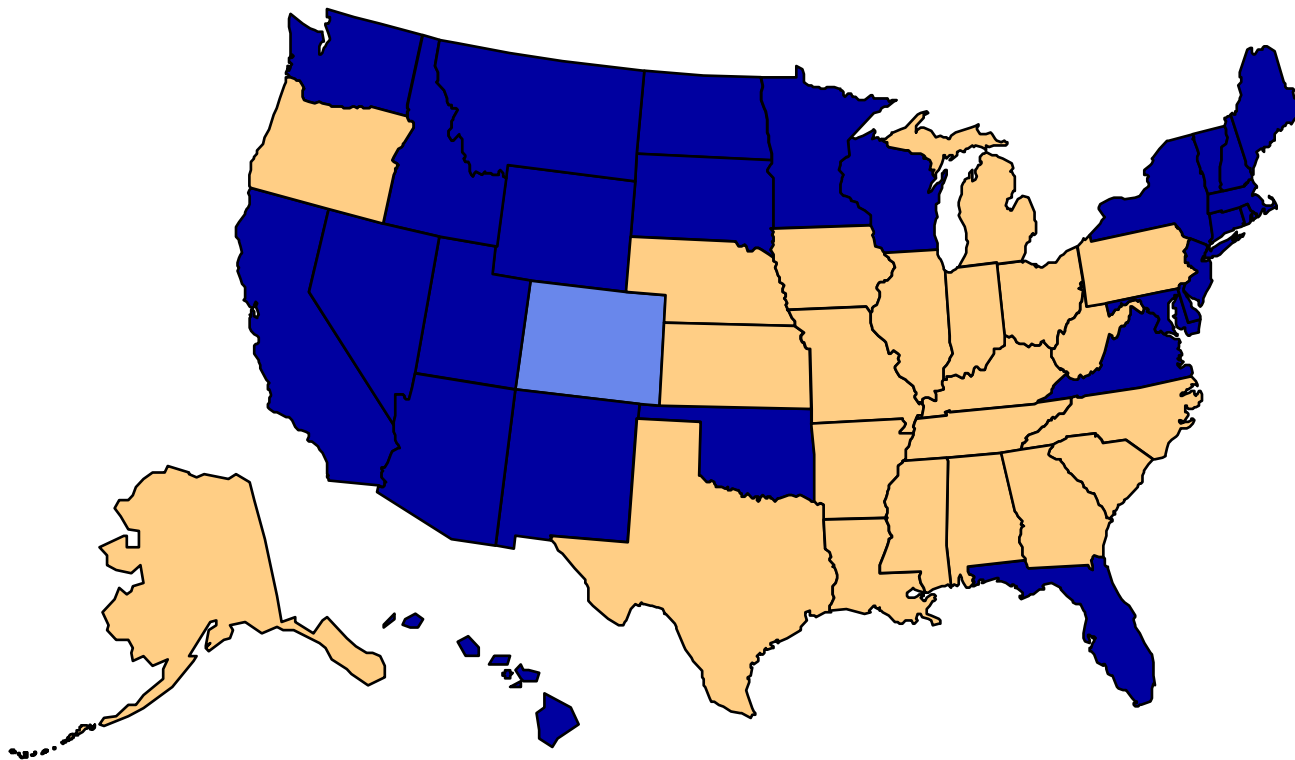
(*BMI ≥ 30 , or ~ 30 lbs. overweight for 5' 4" person)



Obesity* Among U.S. Adults

BRFSS, 2000

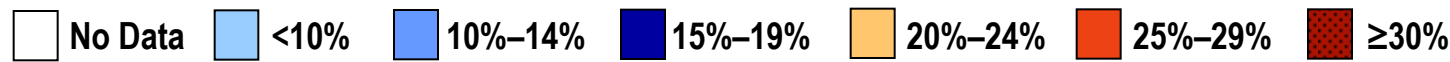
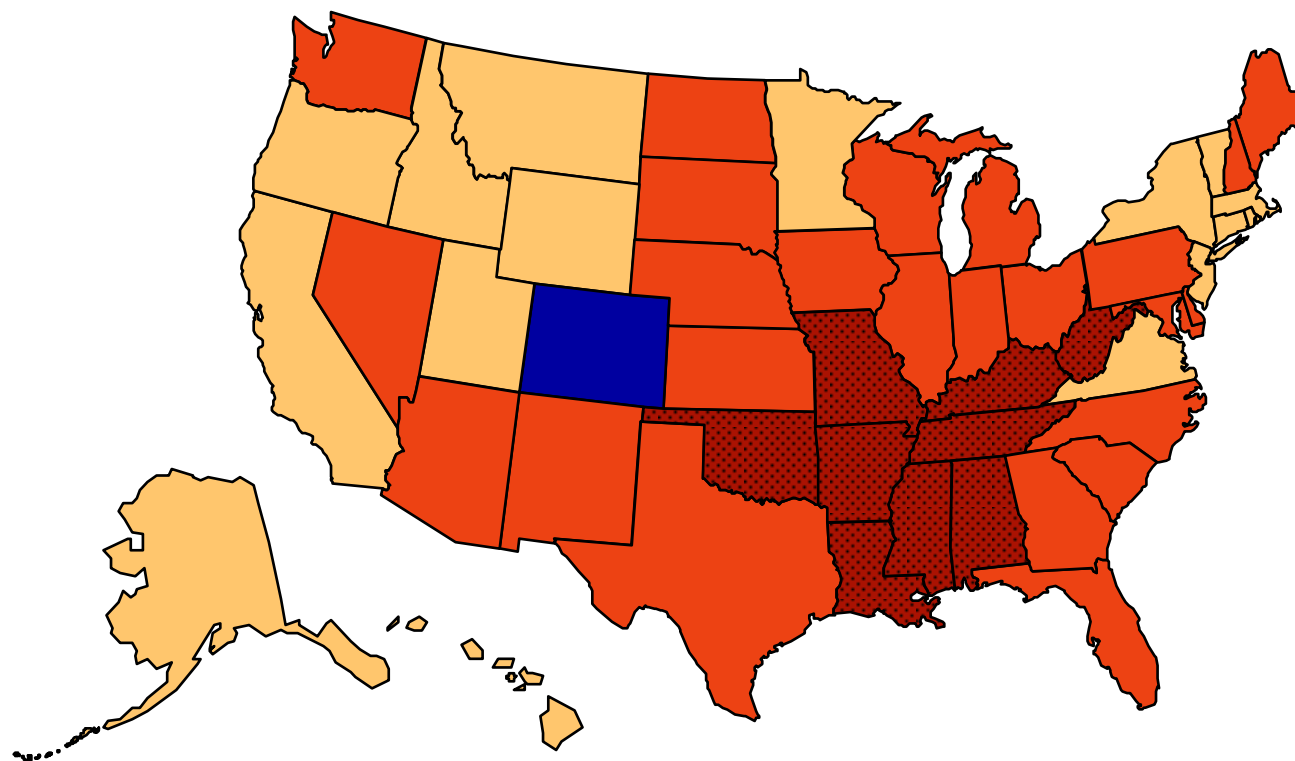
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Obesity* Among U.S. Adults

BRFSS, 2009

(*BMI ≥ 30 , or ~ 30 lbs. overweight for 5' 4" person)



OSA – Treatable

- **Treatment with CPAP (titration)**
 - **Many cognitive deficits reversible**
 - **Canadian study → reduced risk of accident**
- **Operational experience**
 - **Large trucking company**
 - **Instituted screening/diagnosis/treatment**
 - **Reported reduced accidents, reduced health care costs, increased driver retention**

Highway Accident

- Miami, OK –
June 2009
- Vehicle queue
after minor
accident on
interstate
- Tractor-trailer hit queue at 69 mph, no brakes applied
- Overran several vehicles, 10 fatalities
- Continued 270 feet after initial impact



Highway Accident (con't)

- Truck driver**
 - Age 76
 - Just below typical OSA screens
 - Typical driving shift was nocturnal
 - Transition back to diurnal during weeks off
 - This trip was first return, after weeks off, to early morning shift
 - Acute sleep deprivation previous evening
- NTSB Probable Cause: the driver's acute sleep loss, circadian disruption associated with his shift work schedule, and mild sleep apnea**

Transit Accident

- Newton, MA – May 2008
- MBTA train struck another at 38 mph
- Operator of striking train killed, one passenger seriously injured
- Disregarded signal
- Struck train visible more than 1000 ft away



Transit Accident (con't)

- **Last employer medical exam: 5'5½", 243 lbs (BMI 38.6)**
- **Prevalence of sleep apnea more than 50% in patients with an average BMI of 40.0**
- **NTSB report noted that the operator was “at a high risk for having undiagnosed sleep apnea, and she may have been chronically fatigued as a result of the condition.”**
- **NTSB probable cause – failure of the operator of the striking train to comply with the controlling signal indication, likely as a result of becoming disengaged from her environment consistent with experiencing an episode of micro-sleep**

Rail Accident

- Clarkston, MI – November, 2001
- Southbound train proceeded through stop signal from a siding, 13 mph
- Northbound train at 30 mph
- 2 crew killed; 2 injured
- OSA was diagnosed or suspected in both southbound crew



Rail Accident (con't)

- **Engineer (5'11" and 262 lbs – BMI 36.5):**
 - Uncontrolled diabetes
 - Sleep study recommended by MD, ENT

- **Conductor: diabetes, depression**
 - Sleep study 5 yrs prior – AHI 89
 - CPAP, no titration, persistent snoring, somnolence

- **NTSB probable cause:**
 - The crewmembers' fatigue, which was primarily due to the engineer's untreated and the conductor's insufficiently treated obstructive sleep apnea

NTSB Recommendations

- NTSB made recommendations separately to all modal transportation administrations (FAA, FMCSA, FRA, FTA, plus USCG), starting 2001**
- NTSB generally recommended:**
 - Identify diagnosis or risk factors for OSA**
 - Screening programs and treatment**
 - Guidance for operators, employers and physicians**
 - Emphasize that employees who are treated routinely return to work**

Personal Electronic Devices

- Becoming more widespread**
- Difficult to detect or prevent**
- Ultimately depends upon personal responsibility and/or professionalism**
- Potential problem in all modes**

Potential Problem in all Modes

- **Aviation**
 - Minneapolis overflight
 - Using personal computers?
- **Rail**
 - Chatsworth, CA
 - Engineer was texting
 - Collided with oncoming freight train, 25 fatalities
- **Highways**
 - Commercial drivers?
 - Automobiles?
- **Maritime**
 - Philadelphia, barge overran tourist “Duck,” 2 fatalities
 - On phone and computer re son’s medical problem

Thank You!!!



Questions?